



RESEARCH EXPERIENCES TO FOSTER EXPERIENTIAL LEARNING AND TO ENHANCE EDUCATION IN FOOD, SOILS AND ENVIRONMENTAL SCIENCES

Award Number 2008-02146, USDA-CSREES-HSI Education Grant Program

Amount Granted - \$490,000



¹Felix R. Roman (PI), ²Winston De la Torre, ³Marco De Jesus, Miguel Muñoz, ⁴Jorge Gardea, ⁵Sonia Rivera, ⁵Carlos Ruiz and ⁵Rafael Estremera,

²Agronomy and Soils Department, ³Chemistry Department, ¹Food Science and Technology Program, University of Puerto Rico at Mayaguez; ⁴Chemistry Department, University of Texas at El Paso and the ⁵Environmental Technology Program University of Puerto Rico at Aguadilla



Mission Areas:

- Student Experiential Learning
- Student Recruitment and Retention

USDA Collaboration:

- Natural Resources and Conservation Service
- Agricultural Research Service

Objectives:

- 1.To strengthen the Food Science, Applied Chemistry and Agronomy and Soils curriculum through the involvement of students and faculty in meaningful research projects
- 2.To enhance the research skills of undergraduate and graduate students enrolled in food, soils and applied chemistry programs by exposing them to experiential learning, research experiences and community service
- 3.Increase the participation of minority students in programs related to agricultural sciences and the protection of natural resources
- 4.To promote research projects for the solution of specific problems by fostering student-centered research projects that integrate students and specialists from diverse scientific disciplines and backgrounds to solve real-life problems encountered by communities, small developing agro-industries, and government agencies
- 5.To develop a technical "critical mass" capable of supporting multi-institution collaborations and to provide support to solve technical problems of public and private concerns in Puerto Rico
- 6.To create a pipeline of talented students starting at CROEM high school and the mentorship of science teachers up to the PhD program in Applied Chemistry into the fields of food, soils and environmental sciences
- 7.Promote faculty development and competence

Activities:

- Summer research internships for high school sophomore and junior
- Summer research internships for science high school teachers
- Summer research internships for UPRM undergraduate students at UPRM
- Summer research internships for UTEP graduate students at UPRM
- Environmental sciences workshops for high school students and teachers
- Research experiences for UPRM undergraduate students
- Research experiences for UPRM graduate students
- Short summer courses in the area of publications and proposal writing for UPRM faculty and graduate students
- Research experiences for UPRM Ph.D. students at UTEP
- Community services in the area of food, water and soil quality

Beneficiaries:

- Talented high school sophomores and juniors (75)
- Science high school teachers (45)
- Undergraduate students (90)
- MS graduate students (10)
- Ph.D. graduate students (10)
- UPRM faculty (90)

Expected Impact

- Increase in the number of high school students pursuing undergraduate careers in the areas of food, agricultural and environmental sciences.
- Increase the number of high school teachers involved in research at their schools
- Increase the number of minorities and female undergraduate students pursuing graduate studies in the areas of food, agricultural and environmental sciences.

Evaluation Plans:

- Quantify the number of participating minorities students, faculty, females, high school students, high school teachers and disabled persons involved in agricultural and environmental sciences research
- Quantify the number of participating students pursuing BS, MS and Ph.D. degrees in areas related to agricultural and environmental sciences
- Quantify the number of participating faculty involved in research projects in the areas of agricultural and environmental sciences
- Quantify the number of presentations of projects in local/national/international meetings related to the project
- Quantify the number of publications in referred journals related to the project.
- Quantify the amount of federal and non-federal support sought and obtained by faculty involved in the project.
- Quantify the number of collaborations with external researchers, government agencies, industry and other institutions
- Quantify the number of communities served during the duration of the project



Dr Felix R. Roman (3rd from left), PI of project and a group of participating students



Dr David Sotomayor
Mentor in Water Quality



Dr. Miguel Muñoz, CoPI and Director of Agronomy and Soils



Diana Sanchez, PhD student
Environmental Chemistry and
Project participant



Dr. Winston De la Torre
CoPI and Associate Director,
Agronomy and Soils



Dr. Stephanie Whitmire
Mentor, wetland management,
Agronomy and Soils



Dr. Gustavo Martinez
Mentor Soil Chemistry